California Department of Transportation

I-880 Corridor System Management Plan

Project Update

February 15, 2006

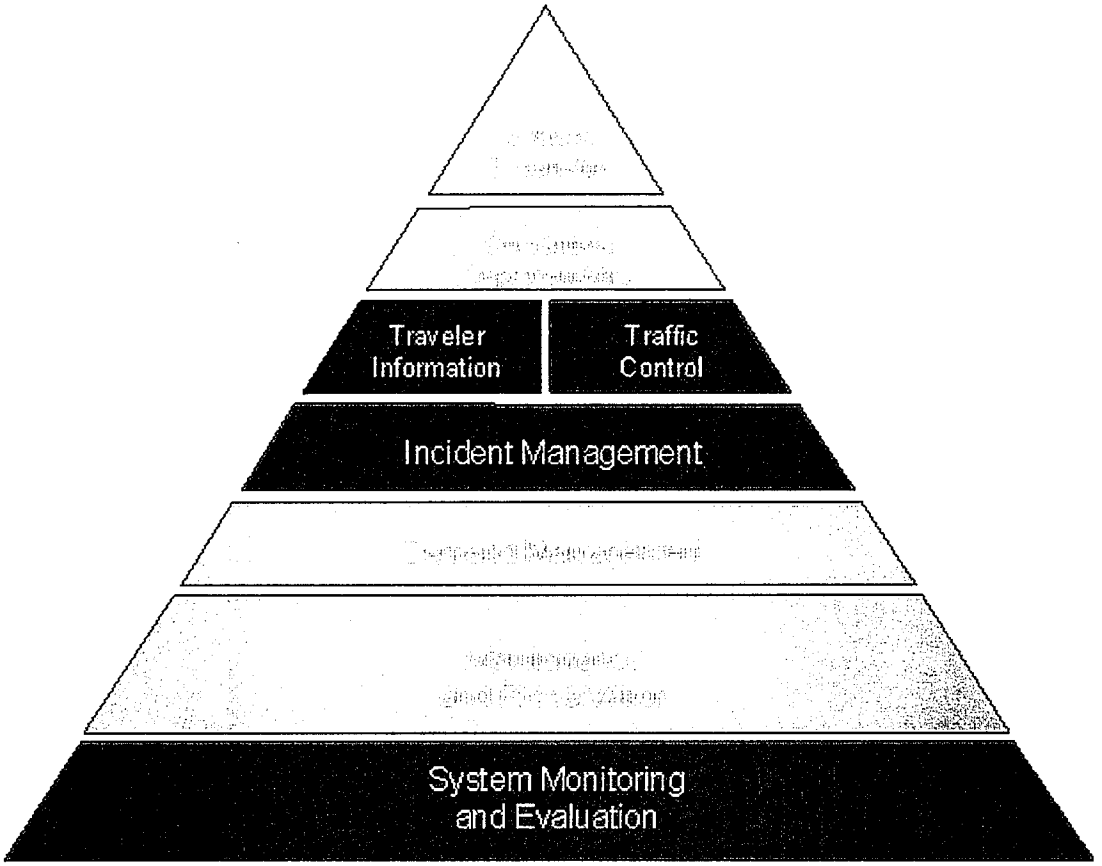
System Metrics Group, Inc.
Cambridge Systematics, Inc.

Agenda

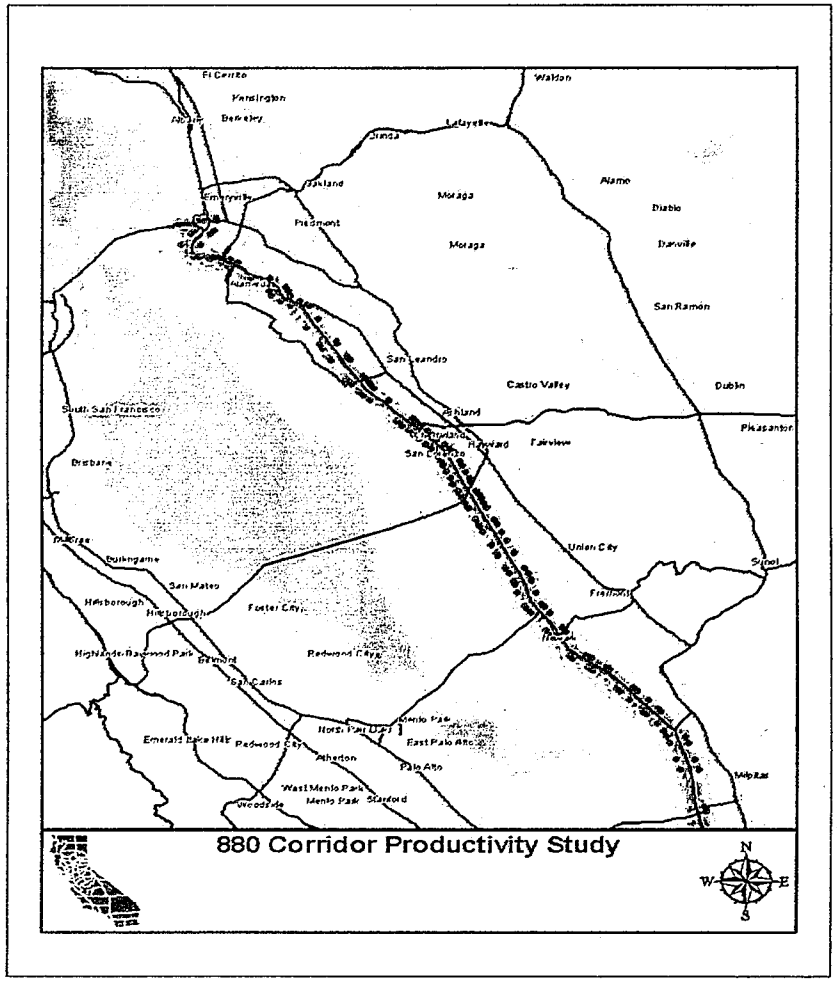
- Project Refresher
- Corridor wide performance
- Corridor bottlenecks
- Next steps

Project Refresher

This study focuses on system management and all its components and will serve as a template for future efforts

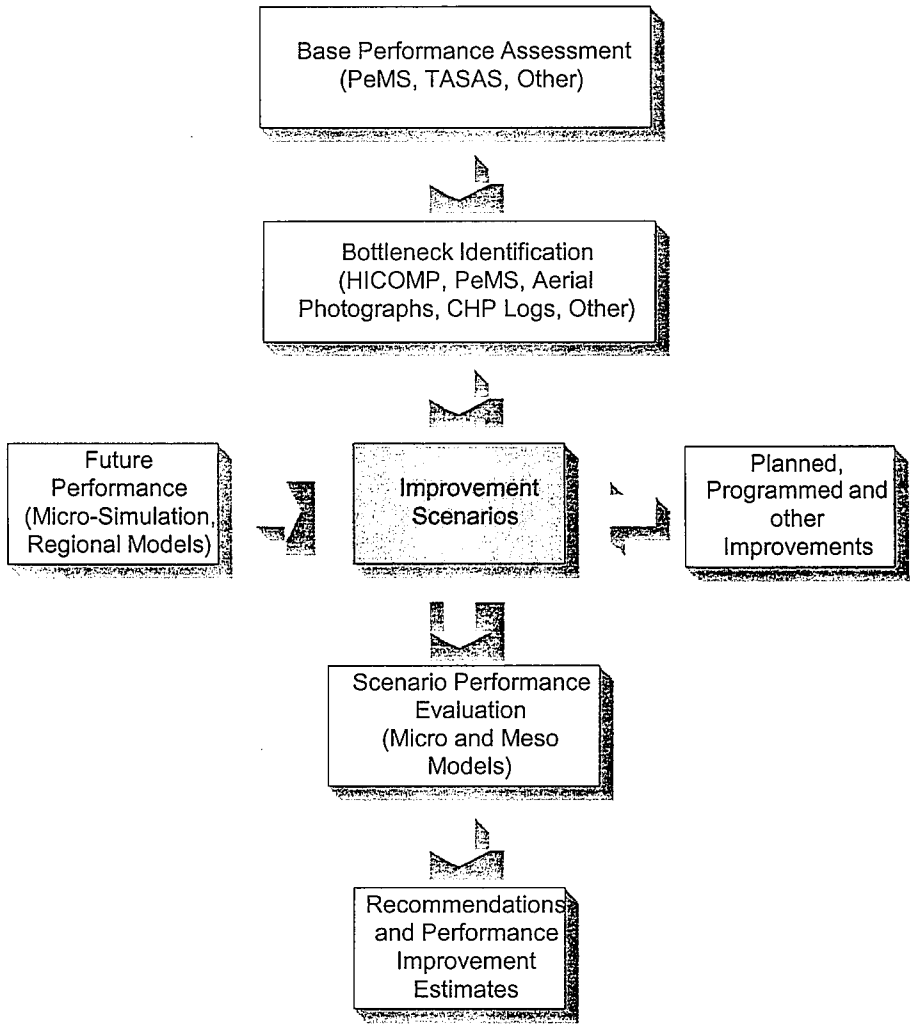


The corridor has good detection and stretched from SR-237 to 7th Street



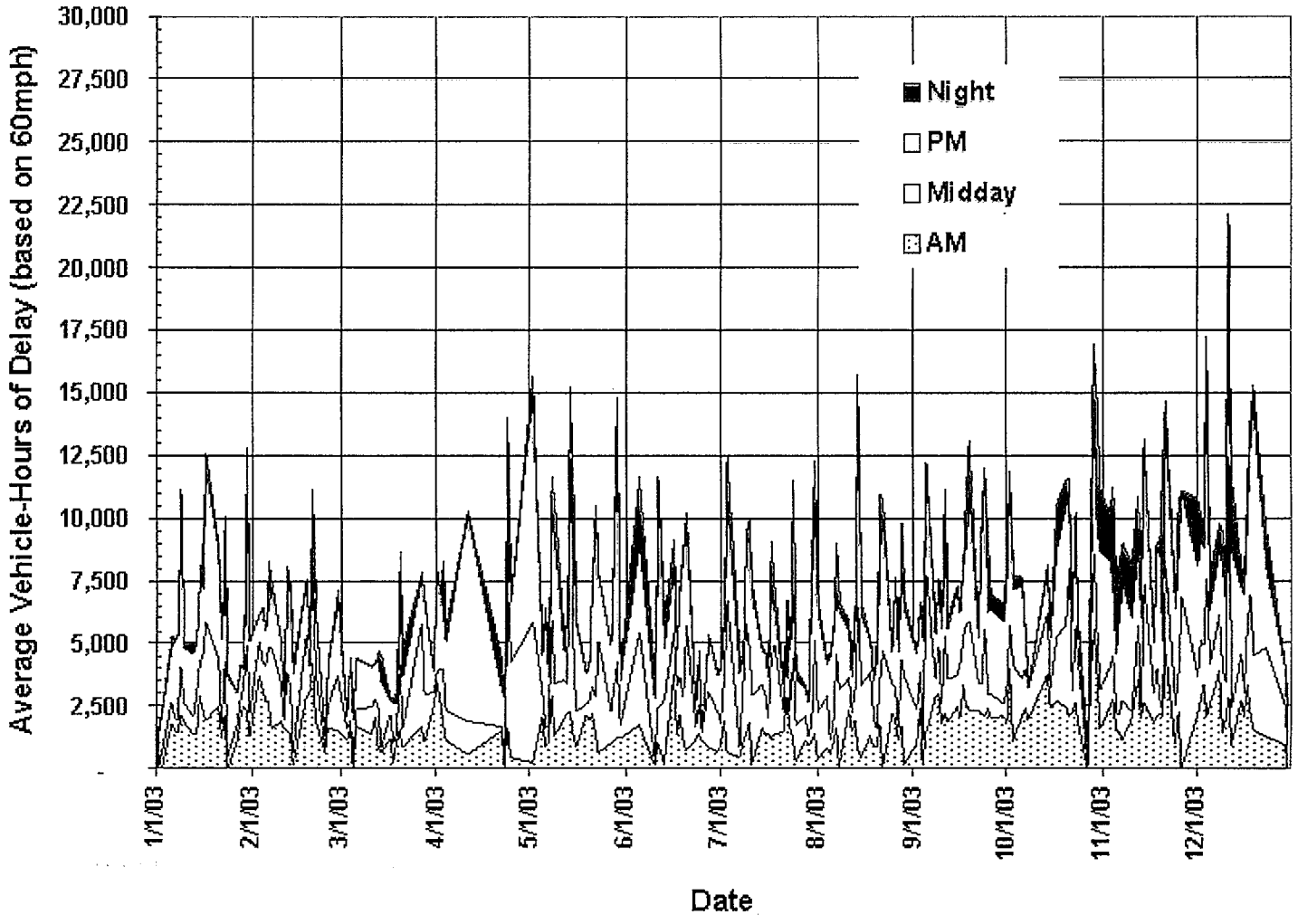
System Metrics Group, Inc.

The approach focuses on detailed performance assessments and micro-simulation based "what-if" analysis

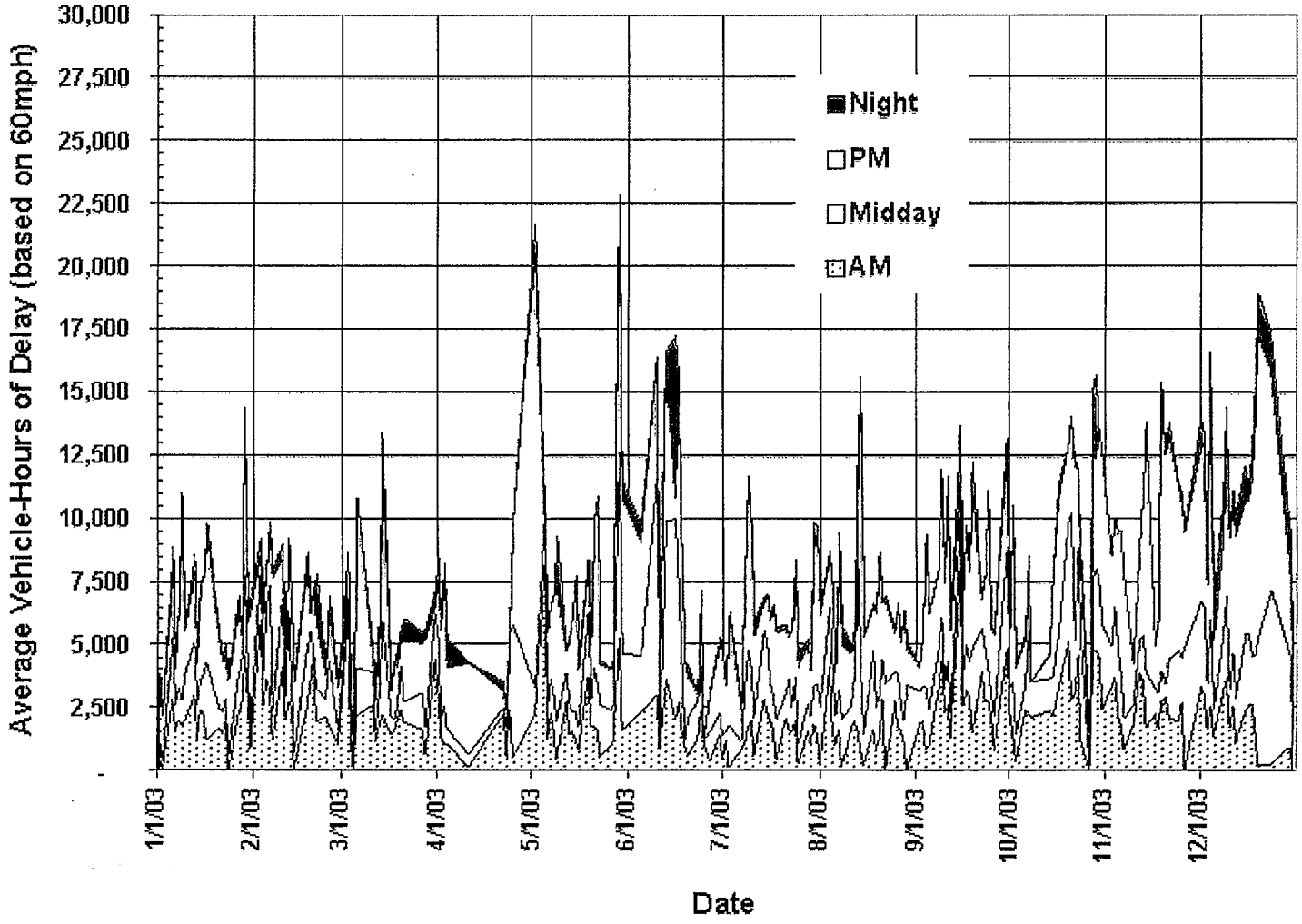


Corridor Wide Performance Assessment

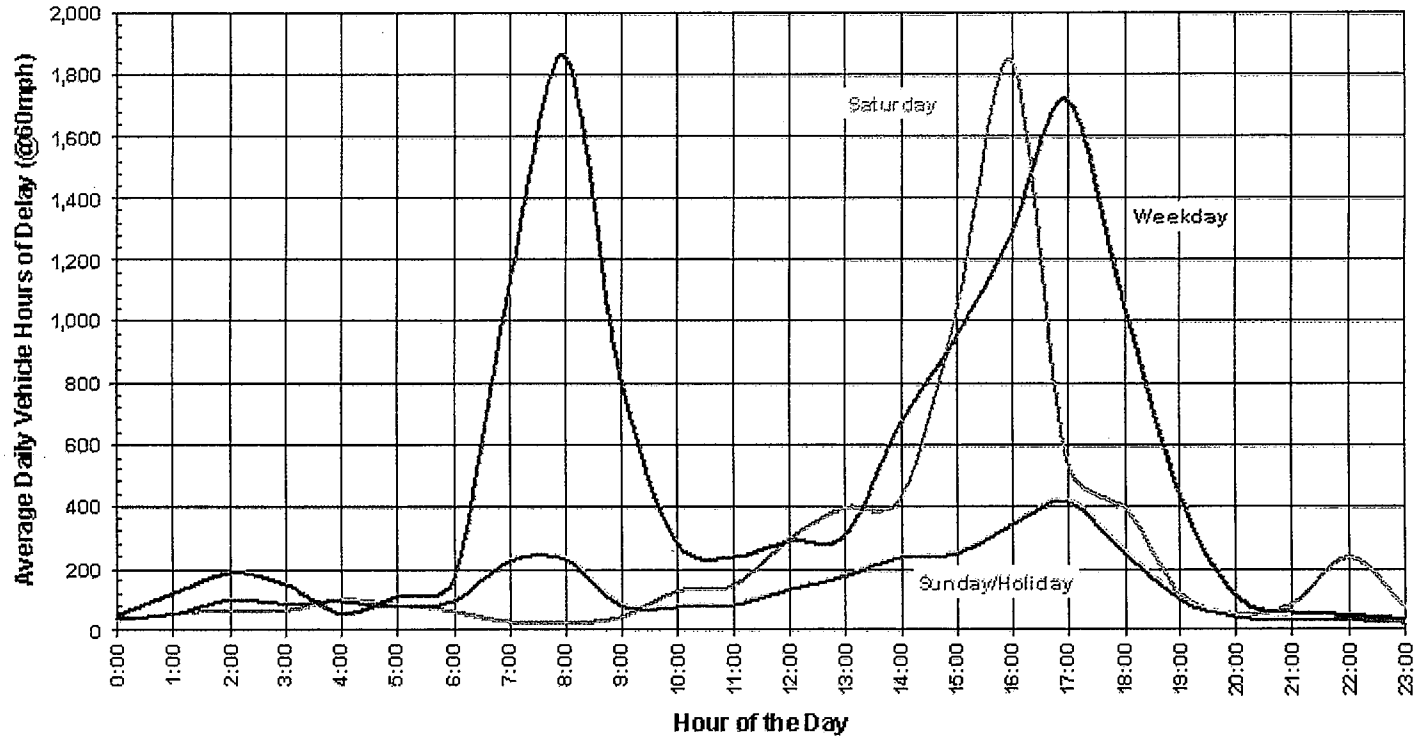
We also used detection data to compute weekday delay on the study corridor over an 18-month period from July 2002 to December 2003 - Northbound



We also used detection data to compute weekday delay on the study corridor over an 18-month period from July 2002 to December 2003 - Southbound

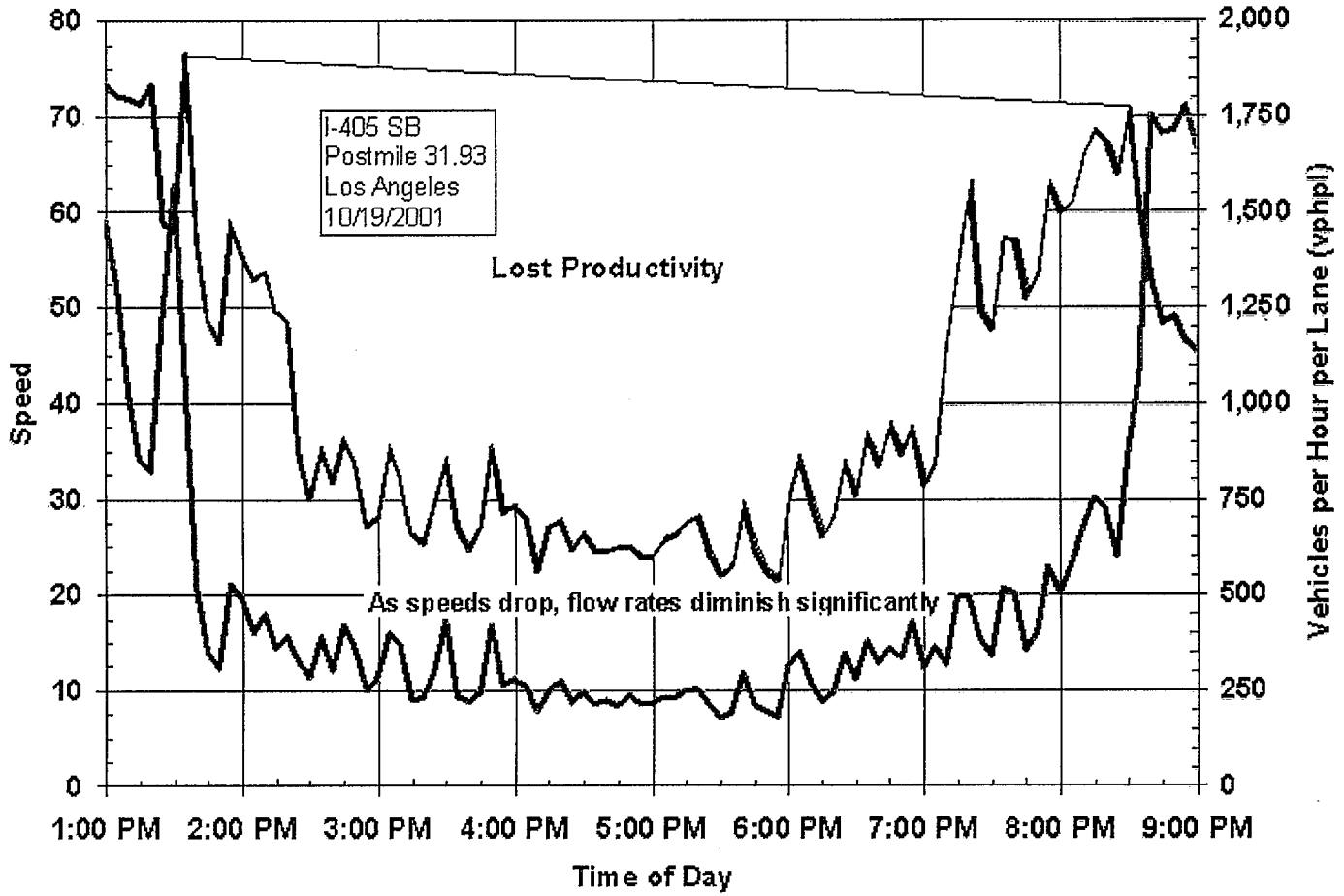


… and computed average delay by time of day for weekdays



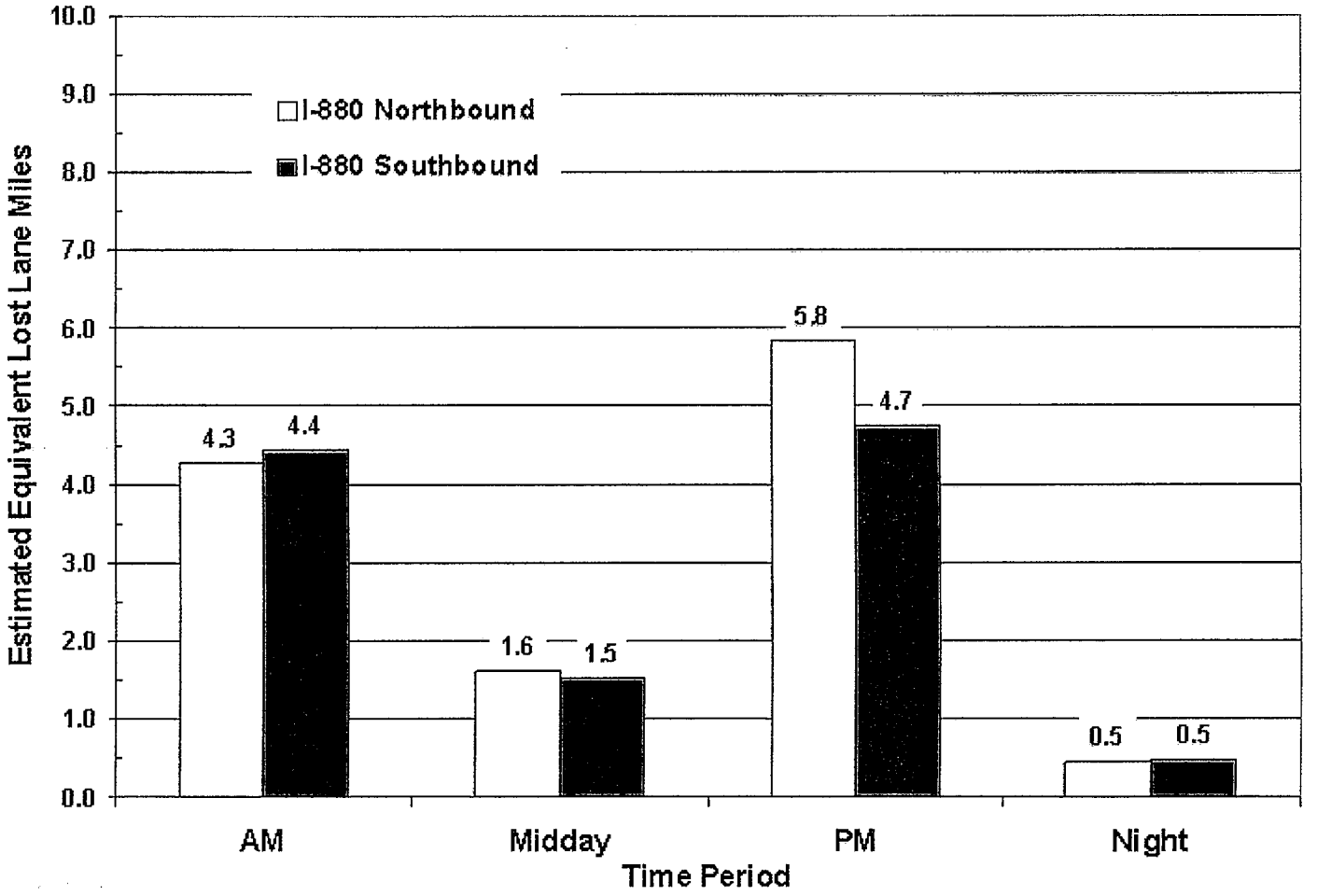
The afternoon peak is nearly as large on Saturdays as during the week

Detection also helps us calculate productivity losses by segment



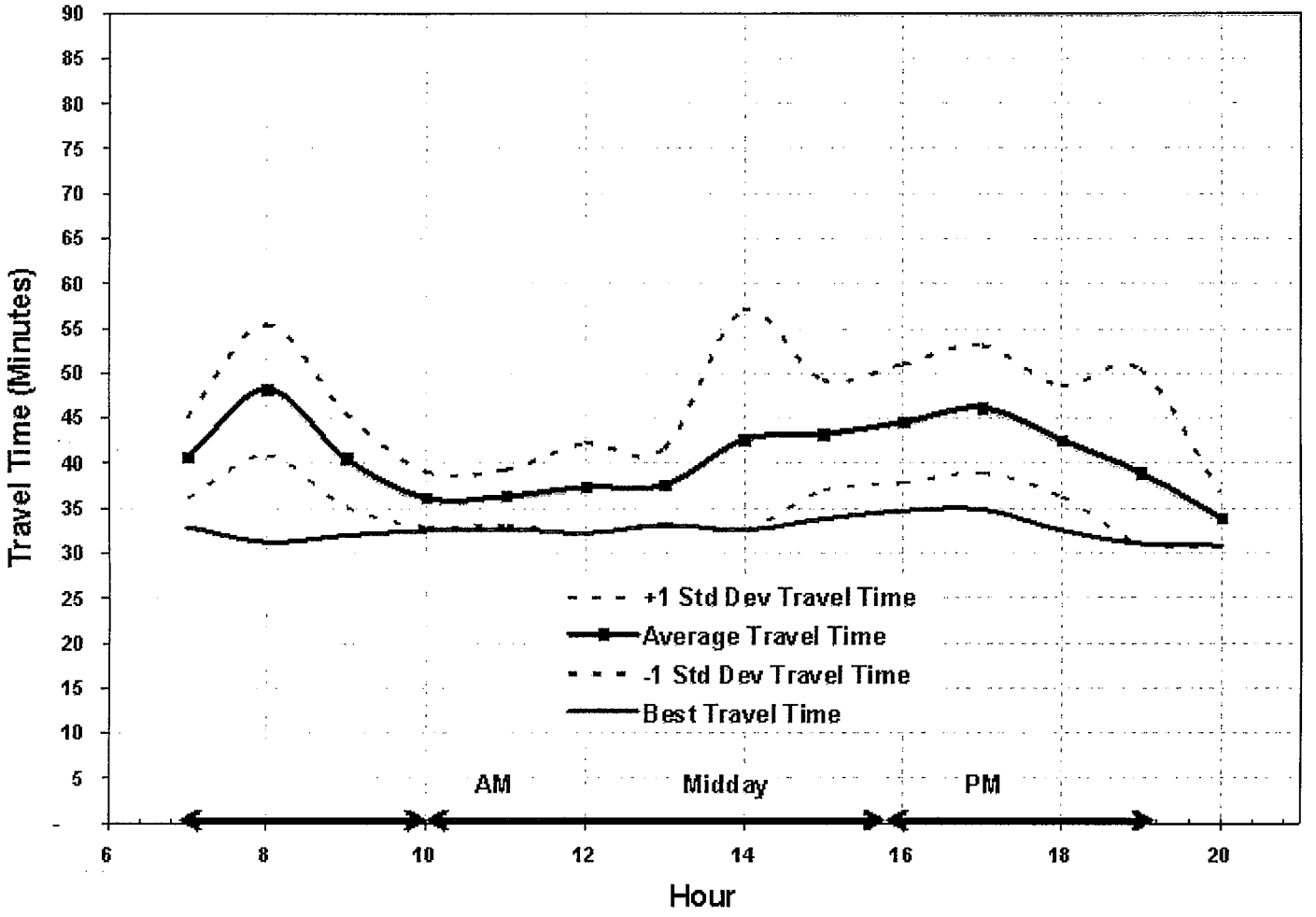
Source: Performance Measurement System (PeMS) – October 2001
Vphpl: volume per lane per hour

… which can be aggregated for the study corridor in terms of lost lane miles for different time periods



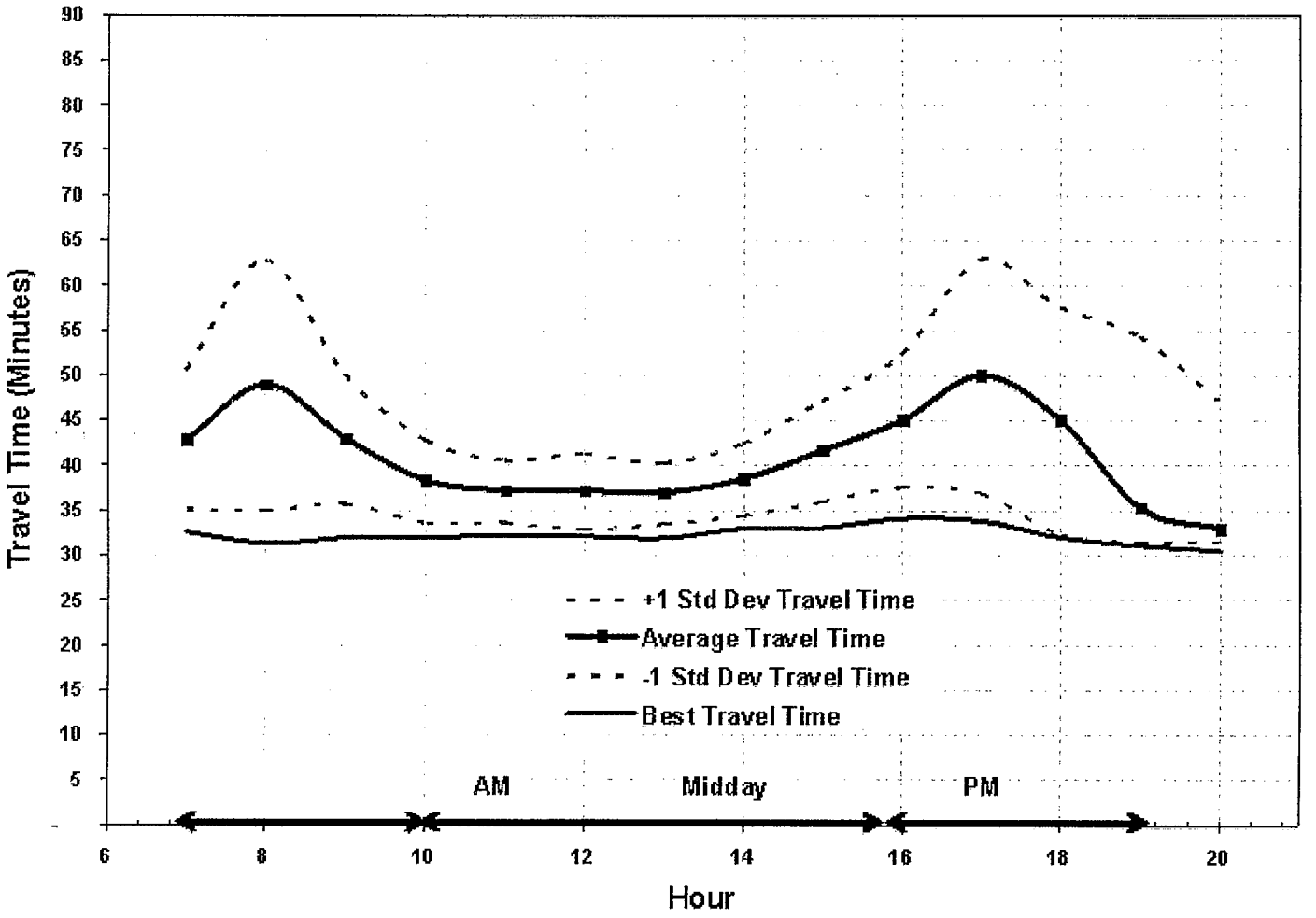
System Metrics Group, Inc.

Travel times and variability of travel time (or reliability) is shown for the corridor as well... Northbound



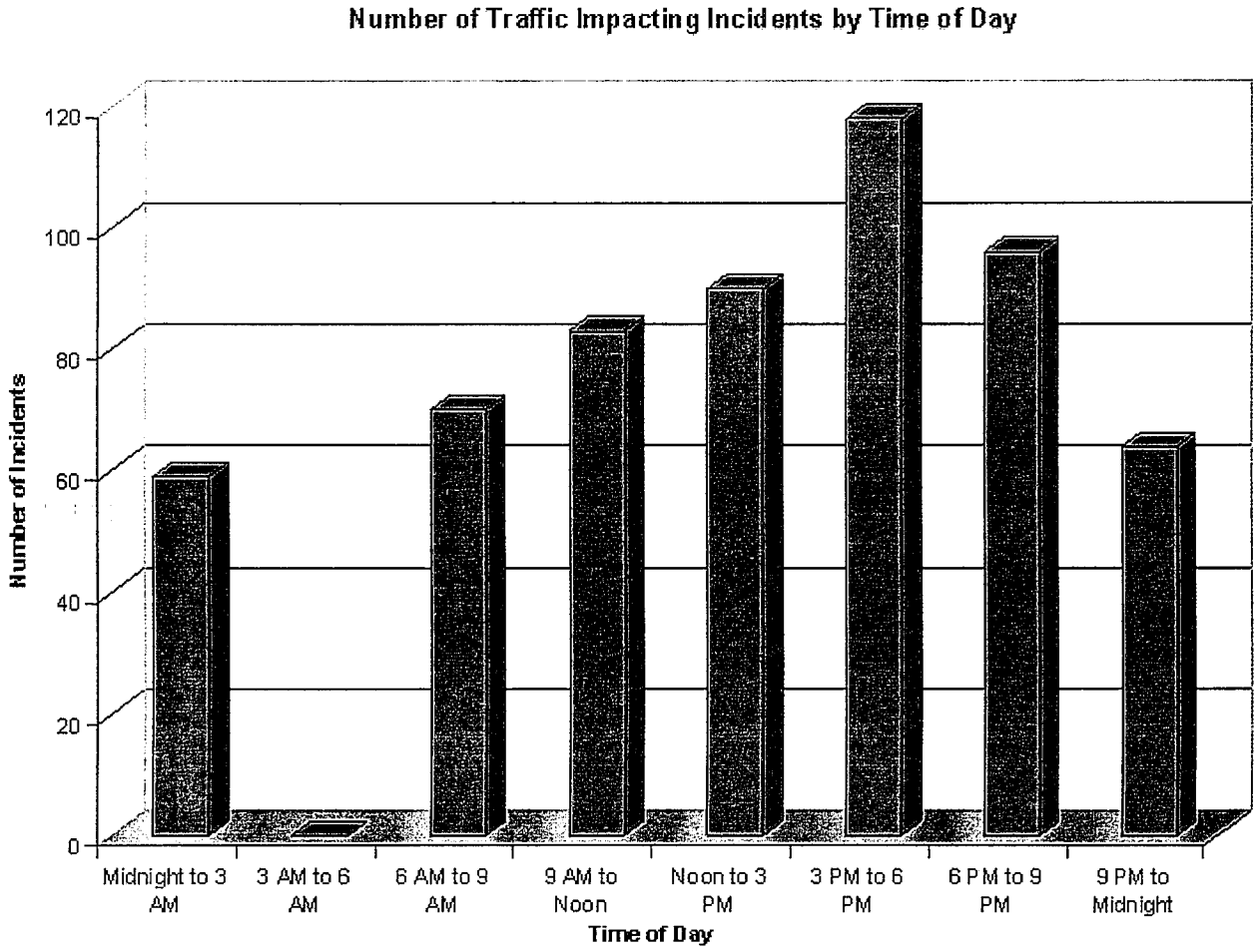
up, Inc.

Travel times and variability of travel time (or reliability) is shown for the corridor as well... Southbound



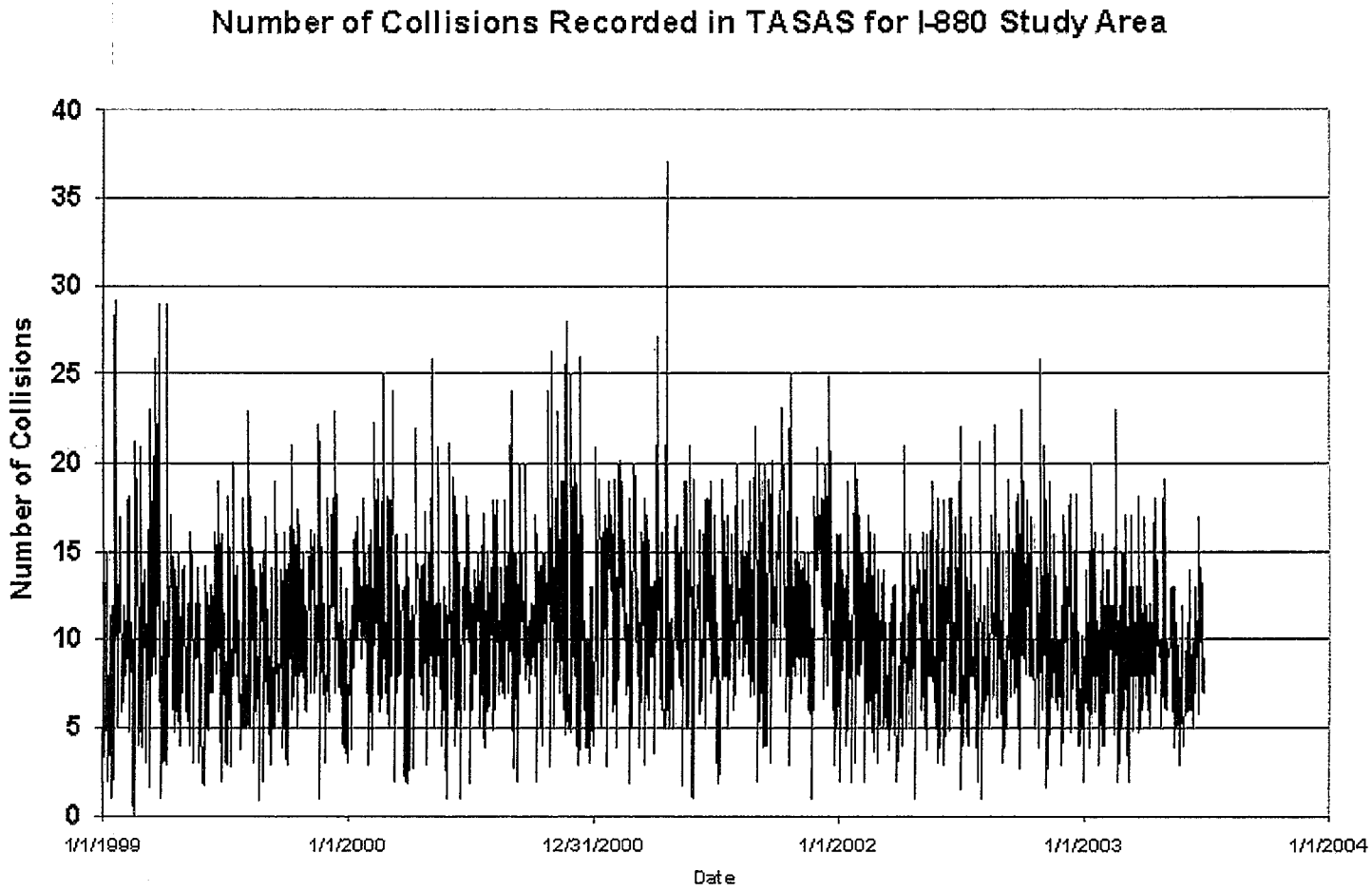
up, Inc.

We identified the CHP reported incidents most likely impact traffic, which represent about 70 percent of all incidents reported



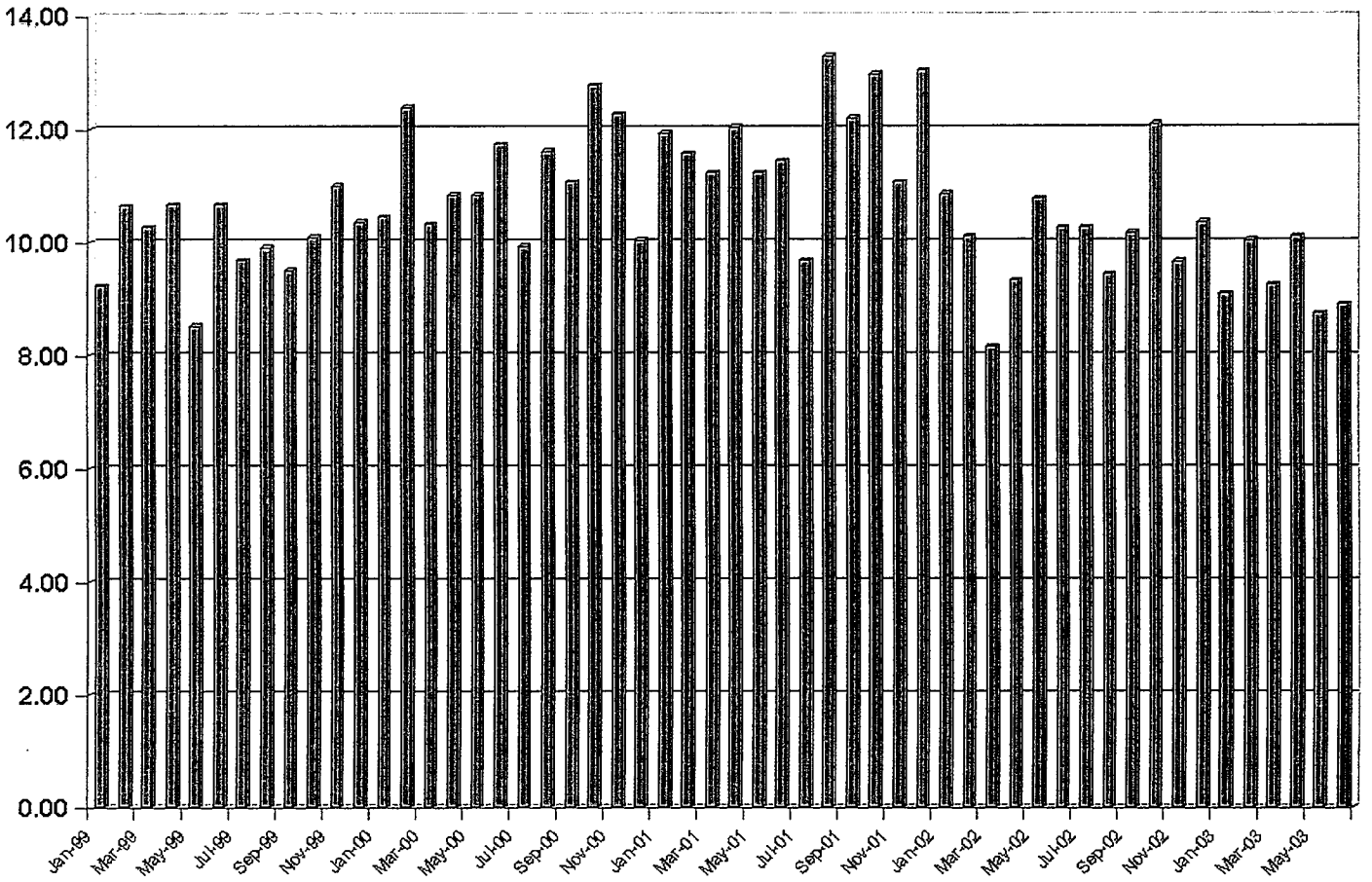
System Metrics Group, Inc.

The Caltrans collision database shows that, over a four-year period, generally between 5 and 15 collisions occur daily… collision-free days are rare

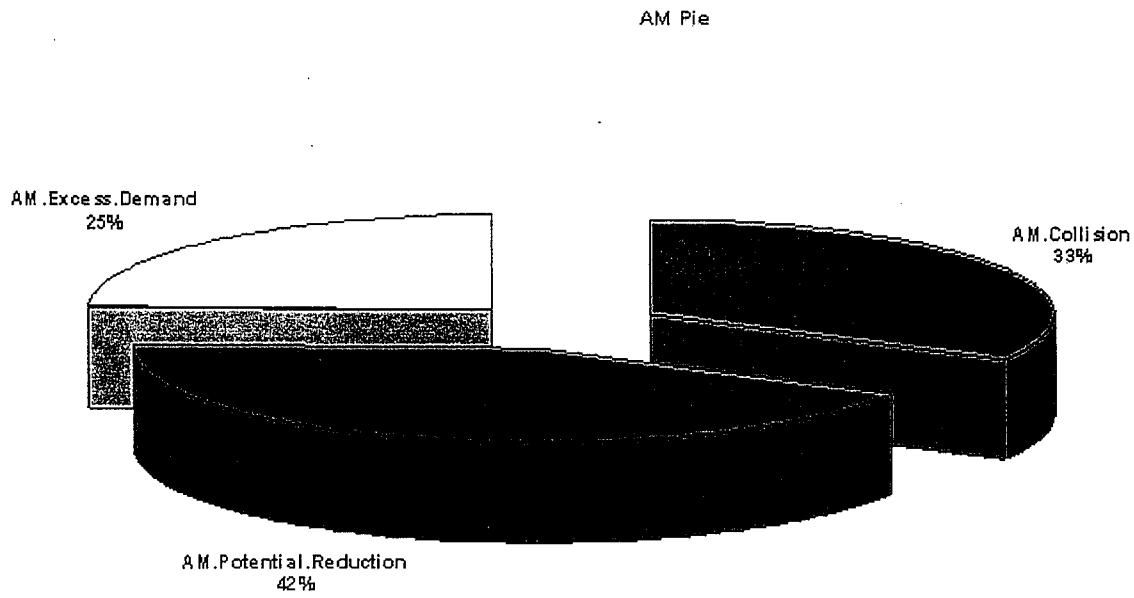


System Metrics Group, Inc.

On the other hands, monthly averages show a downtrend in collisions

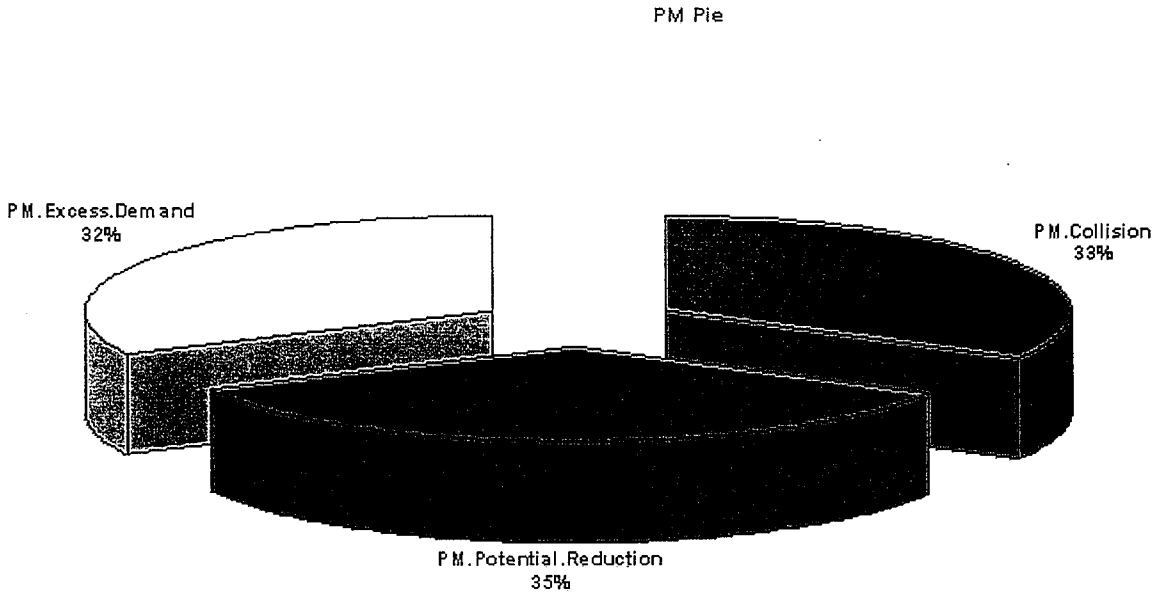


A preliminary UCB analysis of congestion by cause suggests that collisions cause about a third of total delay in the morning peak period ...



System Metrics Group, Inc.

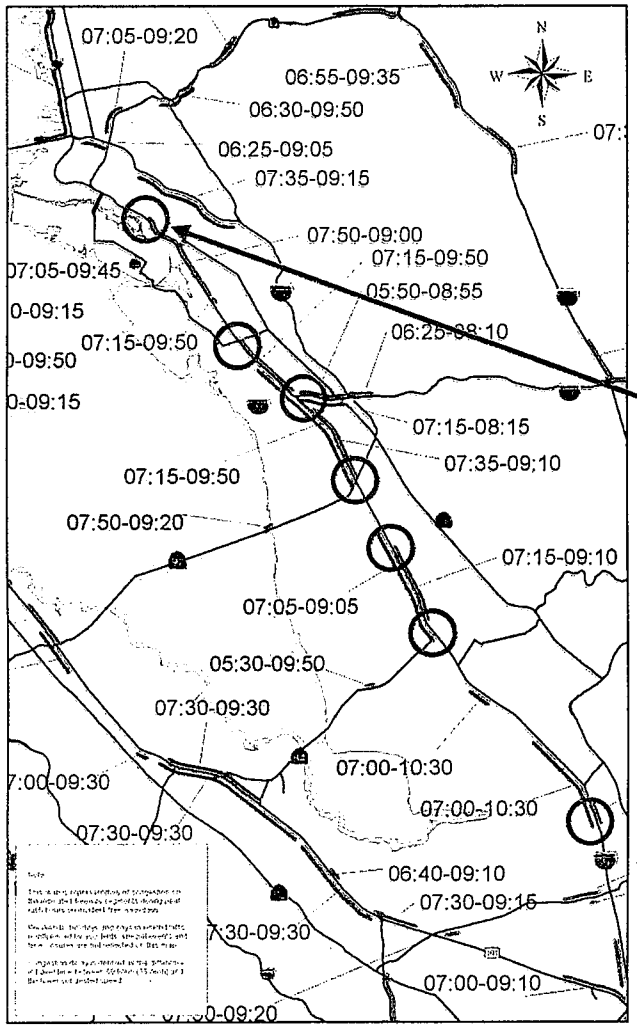
… and in the afternoon peak period



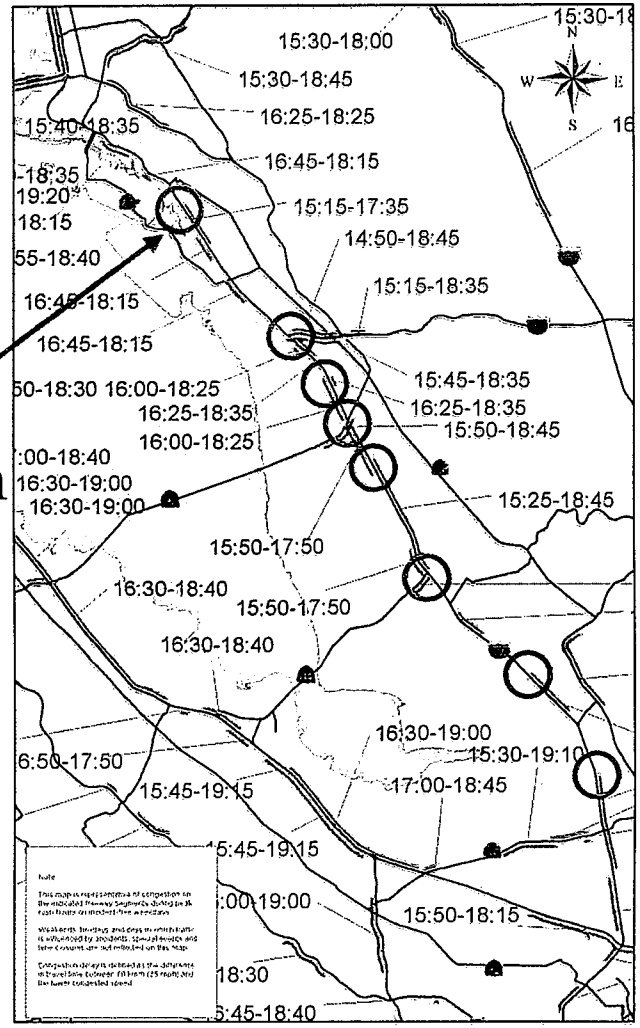
System Metrics Group, Inc.

Corridor Bottlenecks Identification and Analysis

The 2003 Highway Congestion Monitoring Report (HICOMP) helped identify problem areas

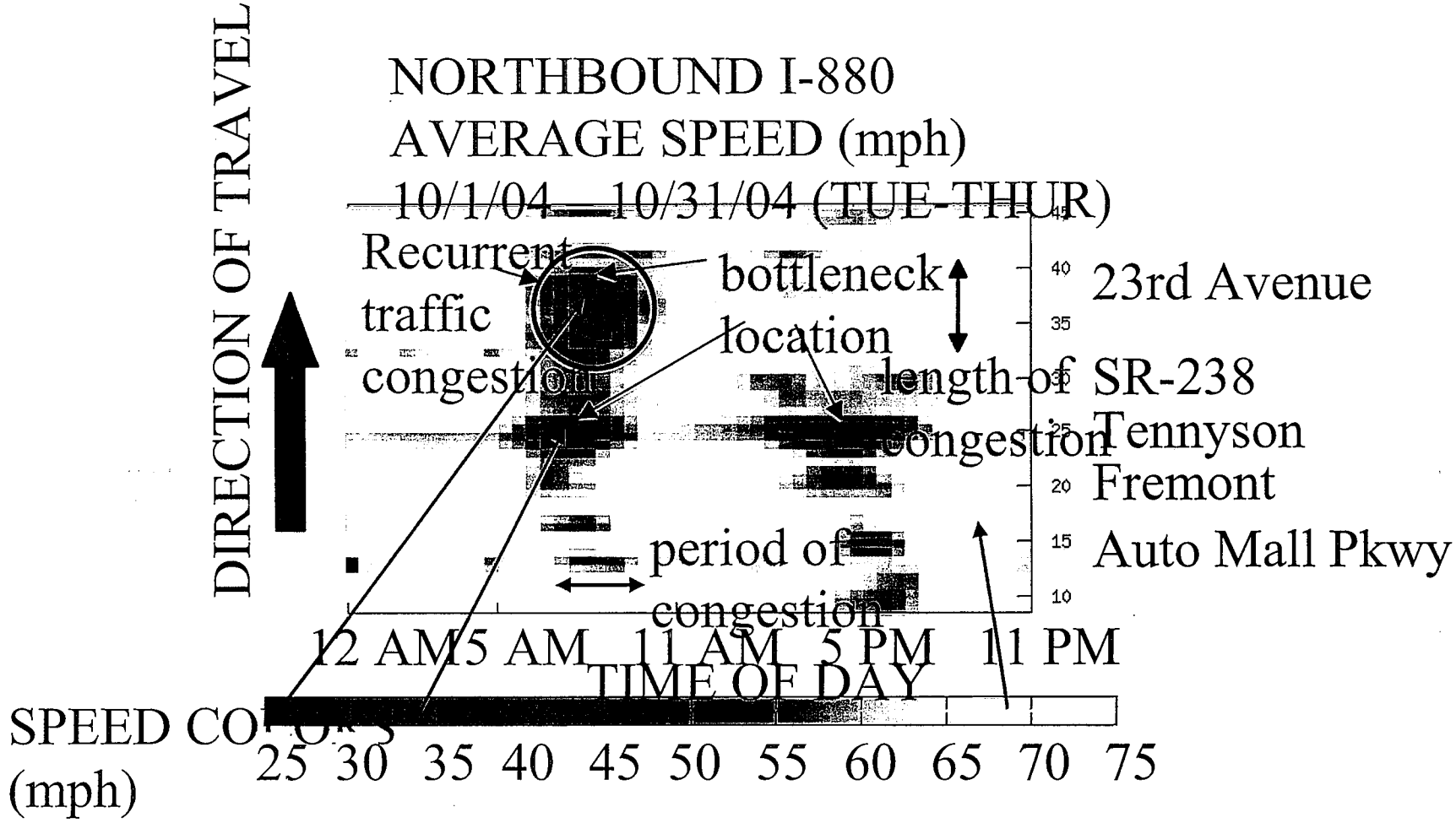


Problem Areas



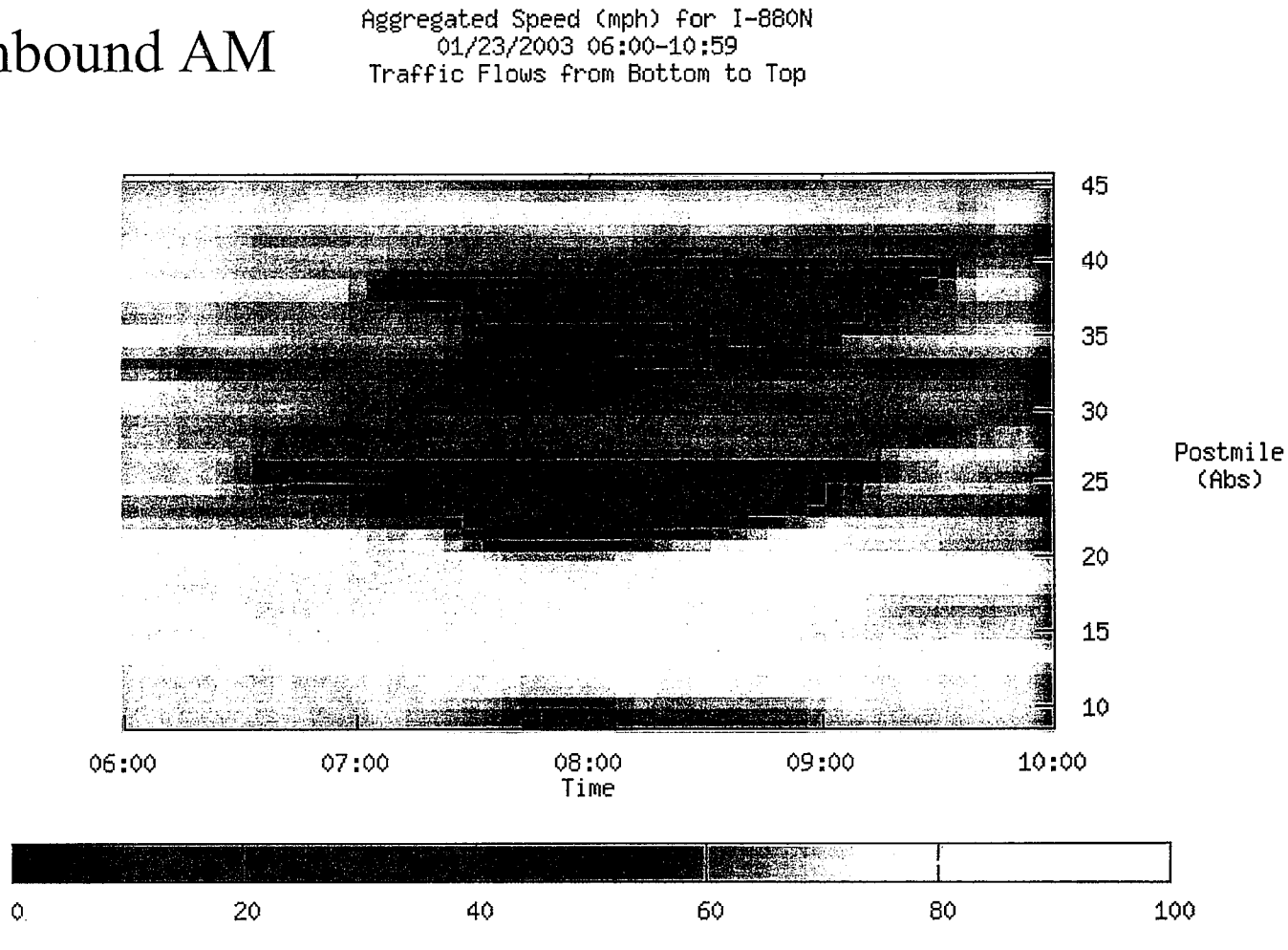
System Metrics Group, Inc.

We then used speed contours helped clarify the specific locations and extent of bottlenecks



Bottlenecks change in severity from day to day

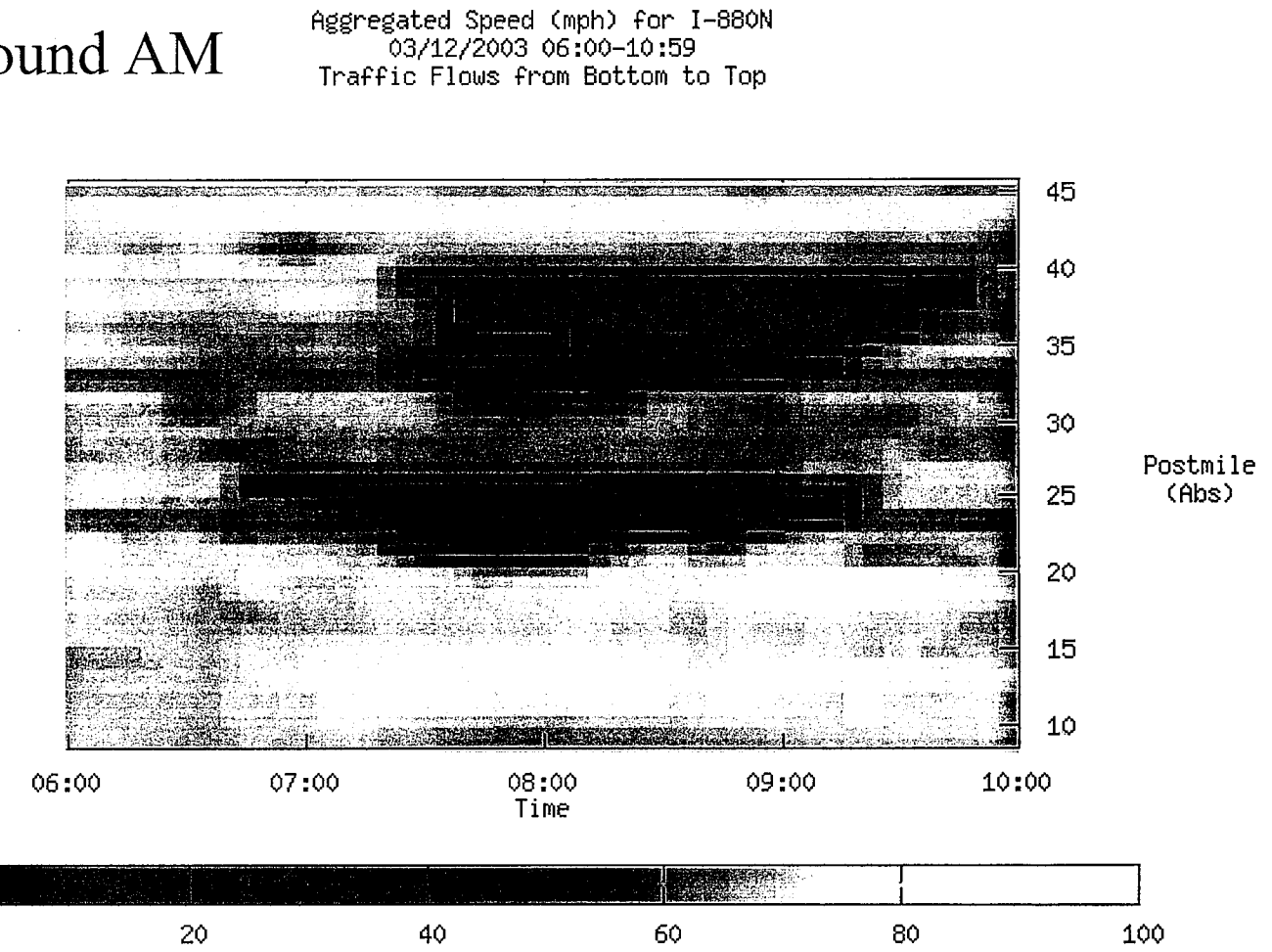
Northbound AM



System Metrics Group, Inc.

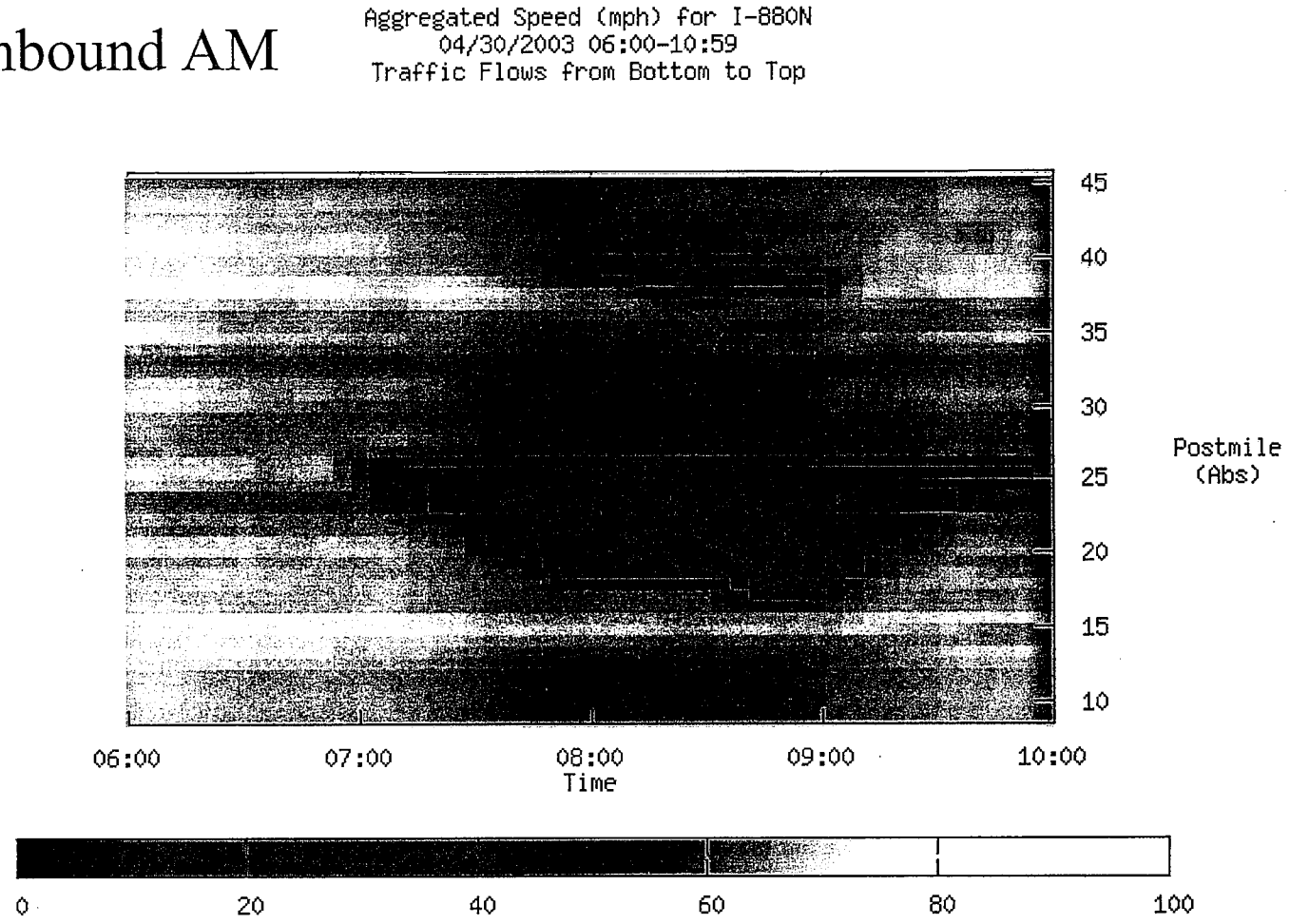
Bottlenecks change in severity from day to day

Northbound AM

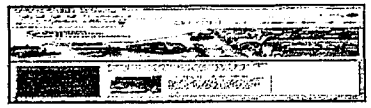


Bottlenecks change in severity from day to day

Northbound AM

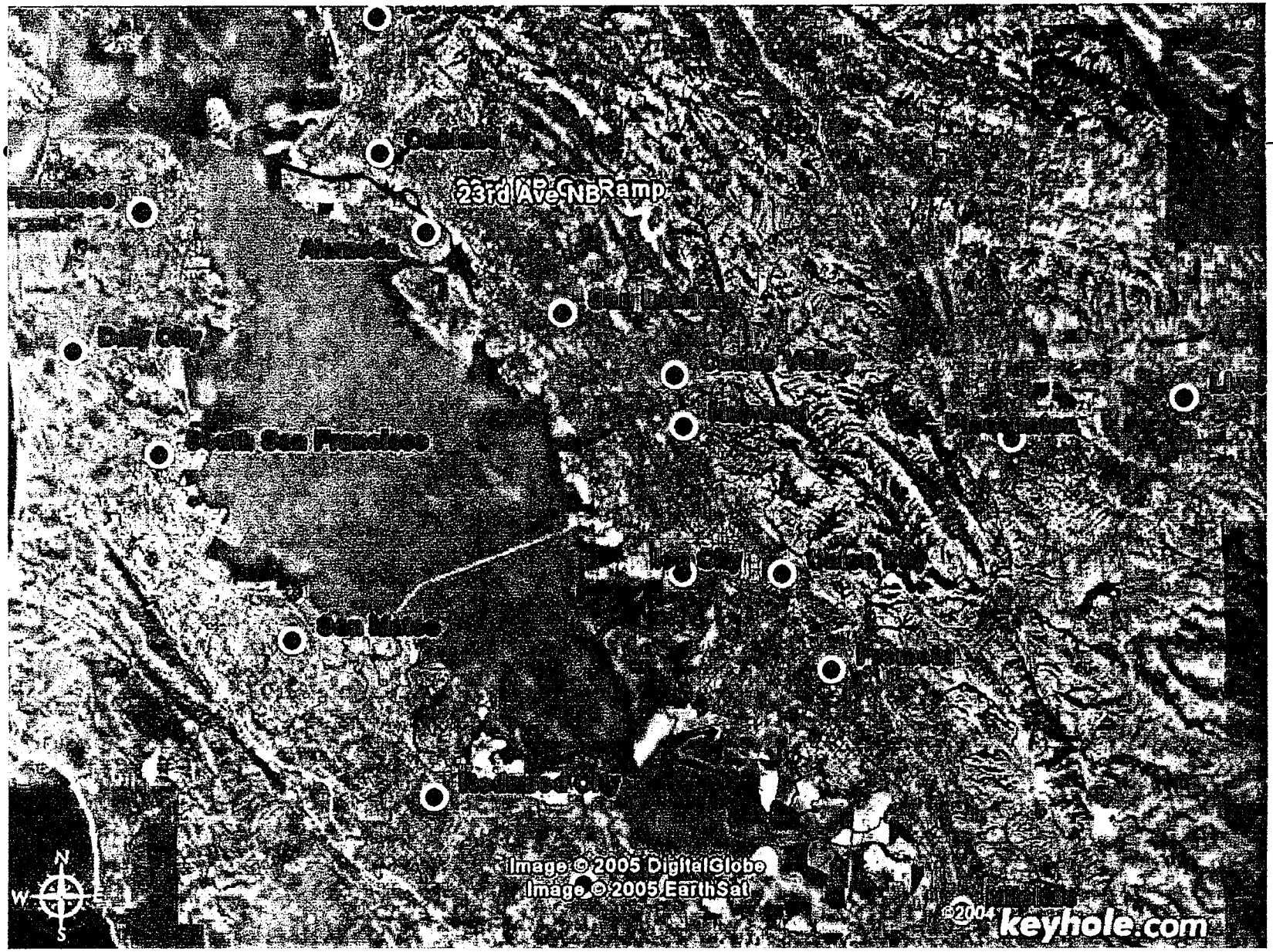


Caltrans

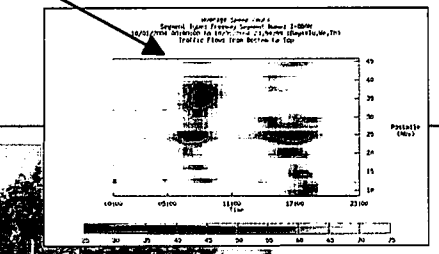


We therefore used monthly speed contour averages to identify the bottlenecks and used aerials and several field observations to define the likely causes of bottlenecks

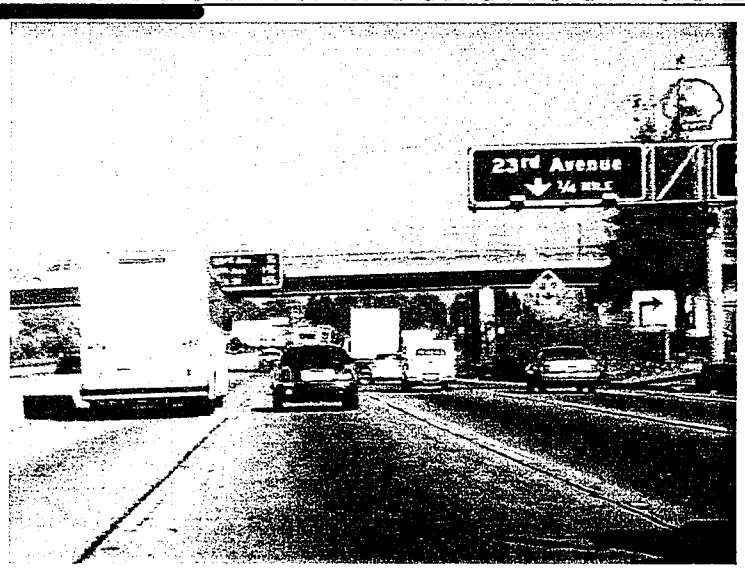
LOCATION	SB AM	SB PM	NB AM	NB PM	POTENTIAL CAUSES
Oak/Broadway		*hidden*			Roadway geometrics; on-ramp merging
23rd Avenue			YES		Roadway geometrics; poor pavement; low overpass; on-ramp merging
98th Avenue			*hidden*		On-ramps merging
Davis/Marina		YES			Lane drop from 5 to 4 lanes; on-ramp merging
SR-238				YES	Off-ramp backup; lane drop 5 to 4 lanes @Washington off; Hesperian off backup
SR-92	YES				Off-ramp backup to mainline; lane drop from 5 to 4 lanes
Tenny Son			YES	YES	Roadway geometrics; on-ramp merging
Whipple	*hidden*	YES			Vertical grade, on-ramp merging
Fremont			*hidden*	*hidden*	Lane drop from 5 to 4 lanes
SR-84		YES			On-ramp merging
South of Mowry	YES				Roadway geometrics
Auto Mall Parkway				YES	On-ramp merging (Construction)
Mission Blvd (Rte 262)	YES				Consecutive on-ramp merging (Construction)

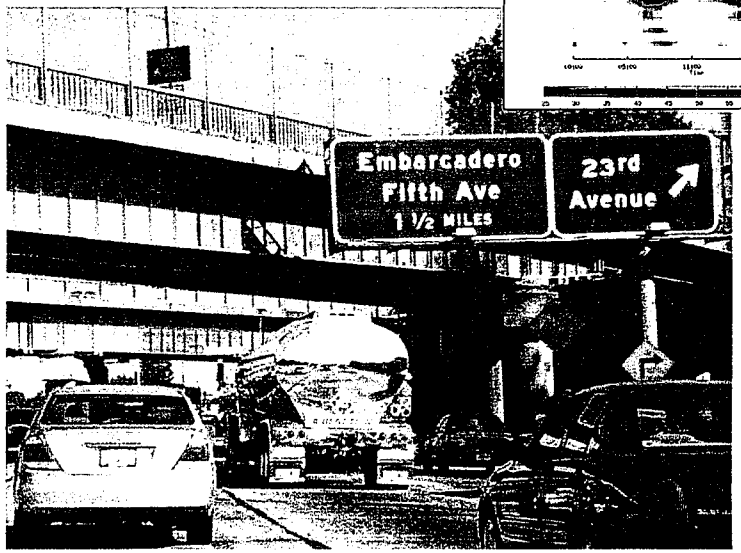

23rd Ave NB Ramp
Image © 2005 DigitalGlobe
Image © 2005 EarthSat
©2004 keyhole.com

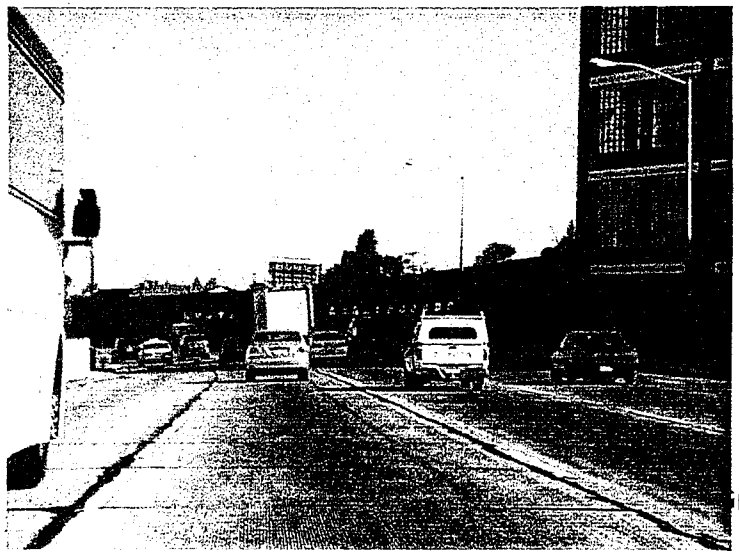
Caltrans



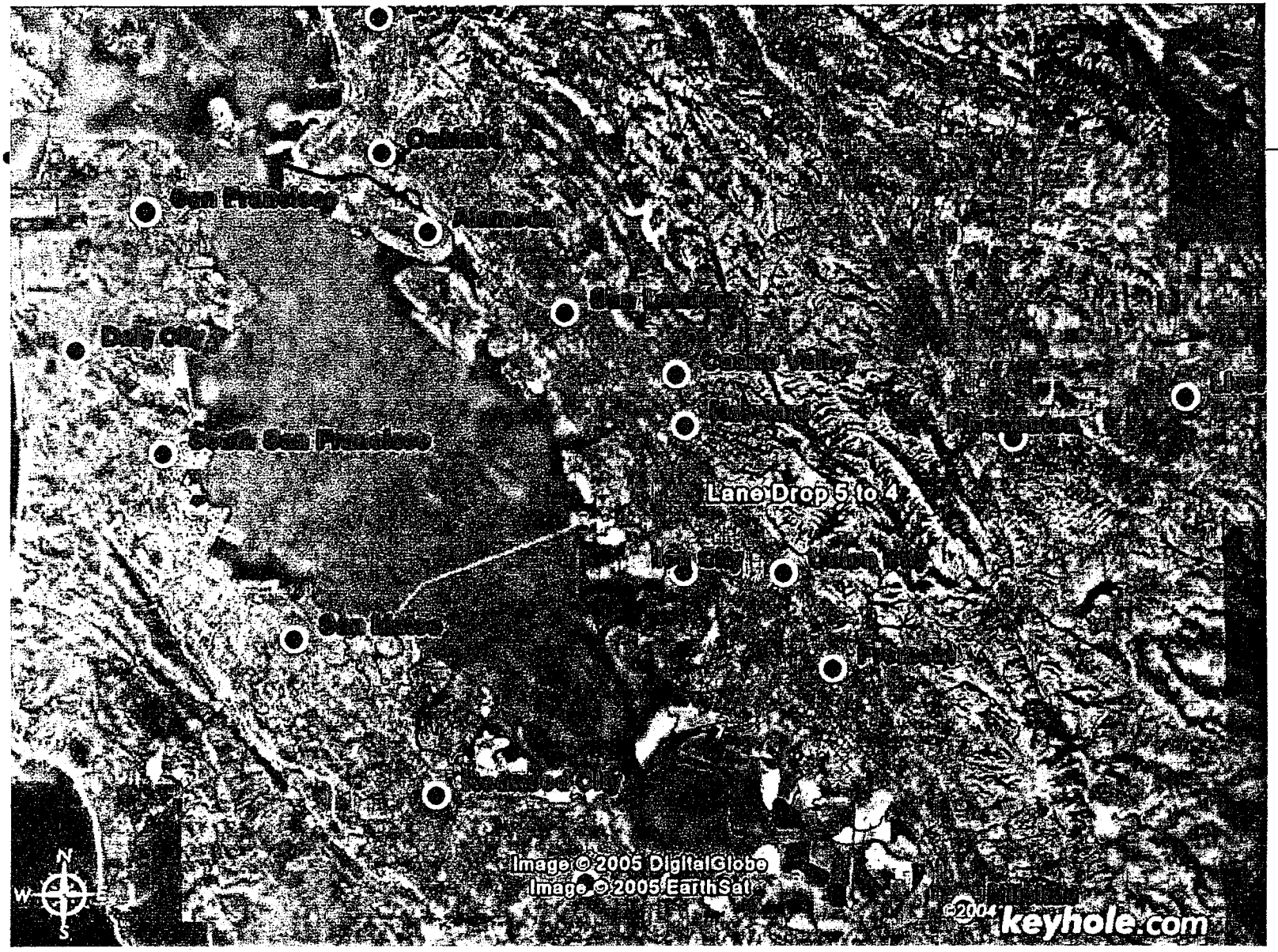
Northbound Bottleneck at 23rd Street







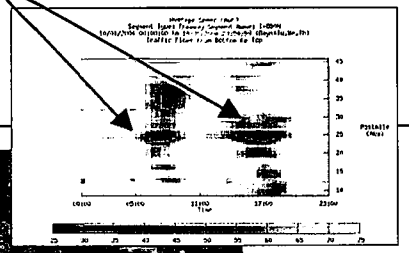
roup, Inc.

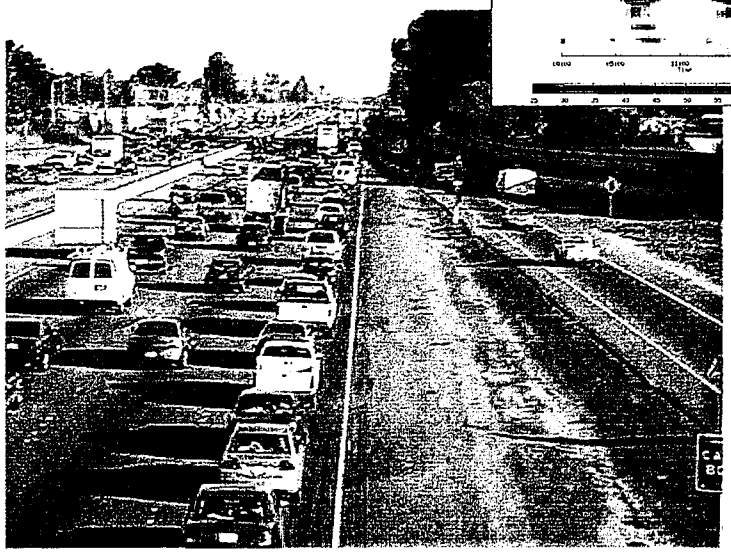


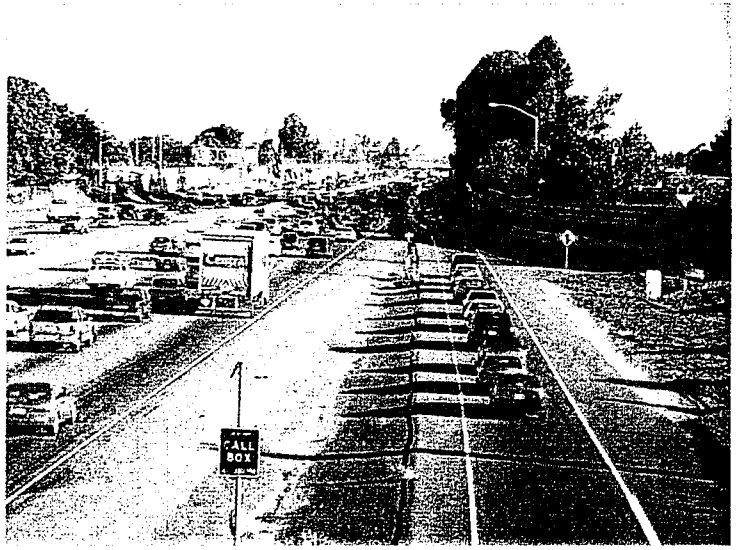
System Metrics Group, Inc.

Caltrans

Northbound Bottleneck at Tennyson







roup, Inc.

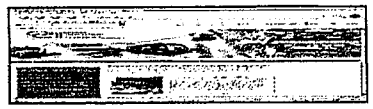
Delay was computed by bottleneck area for the AM peak period and safety was computed for a four-year period (1999 through 2002)

Estimated

LOCATION	From Postmile	To Postmile	Percent Delay Southbound	Number of Accidents Southbound	Percent Delay Northbound	Estimated Number of Accidents Northbound
Tennyson	6.7	25.9			48%	1.1
Mission Blvd	25.9	39.3			48%	1.3
23rd Avenue (Rte 262)	12.1	18.1	23%	0.4		
Mowry	18.1	27.9	44%	1		
SR-92	27.9	44.1	25%	1.1		

Delay was computed by bottleneck area for the PM peak period and safety was computed for a four-year period (1999 through 2002)

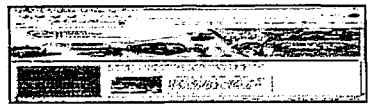
LOCATION Auto	From Postmile	To Postmile	Estimated Percent Delay Southbound	Estimated Number of Accidents Southbound	Estimated Percent Delay Northbound	Estimated Number of Accidents Southbound
Mall Parkway	6.7	14.9			10%	0.2
Tennyson	14.9	26.0			56%	0.5
SR-238	26.0	30.5			12%	1.1
SR-84	20.4	24.0	4%	0.3		
Whipple	24.0	33.8	30%	1		
Davis/Marina	33.8	44.1	42%	0.6		



We have looked at the comprehensive list of projects proposed for the corridor and related each to the bottlenecks …

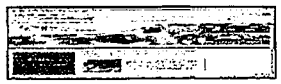
Rte	PM Begin	PM End	Project Source	Project Description	Est Total Cost	Direct Indirect	Near or Long Term
92	4.48	4.48	T-2030 Committed	Dumbarton Express park-and-ride: 90 spaces on Decoto Road near I-880 by the Dumbarton Bridge (includes right-of-way acquisition)	$1.5	I	N
238	14.47	16.70	T-2030 Committed	Widen I-238 between I-580 and I-880 from 4 to 6 lanes. Including auxiliary lanes on I-880 s/o I-238	$108.0	I	L
262	0.00	0.70	T-2030 Committed	Widen SR 262 from I-880 to Warm Springs Blvd. (including reconstructing SR 262-I-880 and SR 262/Kato Rd., Interchanges and reconstruct UPRR undercrossings	$38.3	I	L
262	R0.0	R0.0	Committed	Reconstruct I-880/SR-262 interchange and widen I-880 from SR-262 (Mission Boulevard) to the Santa Clara County line from 8 to 10 lanes (8 mixed flow and 2 HOV lanes)	$162.5	D	L
880	0.00	31.68	T-2030 Big Tent	I-880 incident management, ramp metering and travel advisories	$20.00	D	N
880	0.00	34.50	10 YR SHOPP	Install TMS Elements (Monitoring Statations, CCTV, CMS, HAR)	$6.2	D	N
880	2.28	2.28	T-2030 Committed/RM II	Reconstruct I-880-Route 262 Interchange including UPRR grade seperation (phase 2)	$52.0	I	L
880	3.25	3.25	T-2030 Committed	Exend Fremont Boulevard to connect to I-880/Dixon Landing Road	$4.50	I	L
880	6.24	6.24	T-2030 Committed	Stevenson Blvd. I-880 Blacow Road ramp impacts (Widen Stevenson Fr 880 to Blacow, 4 to 6 lns)	$1.2	I	L
880	8.84	8.84	T-2030 Big Tent	I-880 SB to SR 84 WB HOV direct connector	TBD	I	L
880	15.6	17.6	T-2030 Committed/RM II	I-880/SR-92 I/C Improvements	$133.8	D	L
880	16.69	20.29	T-2030 Vision	Widen I-880 between Whipple and Jackson	TBD	D	L
880	19.2	24.8	TCCR/ TOPS-T-2030	Widen I-880 for NB HOV lanes from Hacienda to 98th St. and SB from 98th St. to Marina Blvd.	TBD	D	L
880	20.90	20.90	2004 10 Yr SHOPP	I-880-Washington Ave. interchange Realign SB off-ramp & install traffic signals	$80.0	I	N

I = Indirect, D=Direct, N=Near Term, L=Long Term



We have looked at the comprehensive list of projects proposed for the corridor and related each to the bottlenecks ...continued

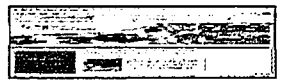
I = Indirect, D=Direct, N=Near Term, L=Long Term



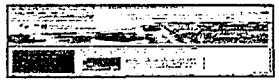
Transit projects cannot be directly evaluated by micro-simulation, but would be taken into account indirectly ...

Rte	PM Begin	PM End	Project Source	Project Description	Est Total Cost	Direct Indirect	Near or Long Term
OFF	OFF	OFF	T-2030 New committed/RM II/Ala CTP	BART-Oakland International Airport Connector	$254.3	T	T
OFF	OFF	OFF	T-2030 New Commitment	AC Transit Bus Rapid Transit (BRT) and Enhanced Bus, Phase 1: Telegraph Avenue/International Boulevard corridor	$167.0	T	T
OFF	OFF	OFF	T-2030 New Com / ALA CTP-Tier 1	Transit oriented development (including replacement parking) at MacArthur, West Oakland, and/or Coliseum BART Stations	$25.0	T	T
VAR	VAR	VAR	T-2030 Committed	AC Transit bus corridor improvements	$20.0	T	T
VAR	VAR	VAR	T-2030 Committed	Capitol Corridor intercity rail service (track capacity/frequency imp. from Oakland to San Jose designed to allow 16 daily round trips between Oakland and Sacramento/San Jose)	$158.0	T	T
VAR	VAR	VAR	T 2030 Committed/RM II	RM II Express Bus North Improvements (includes park and ride lots and rolling stock)	$10.5	T	T
VAR	VAR	VAR	T 2030 Committed/RM II	RM II Express Bus North Improvements (includes park and ride lots and rolling stock)	$18.0	T	T

T = transit



Next Steps



Next Steps

- Base year calibration of simulation model
- Forecast year model development
- Improvement scenario development and testing
- System management plan development